EXECUTIVE SUMMARY

The Proposed Action analyzed in the ~~Draft~~ Final Environmental Impact Statement is implementation of the Puget Sound Chinook Harvest Resource Management Plan, jointly-developed by the Washington Department of Fish and Wildlife, and the Puget Sound treaty tribes, under Limit 6 of the Endangered Species Act (ESA) 4(d) Rule for implementation in the ~~2004~~ 2005–2009 fishing years, beginning May 1, ~~2004~~ 2005 (May 1, ~~2004~~ 2005 – April 30, 2010). The proposed Resource Management Plan would regulate commercial, recreational, ceremonial, and subsistence salmon fisheries potentially affecting the listed Puget Sound Chinook Salmon Evolutionarily Significant Unit within the marine and freshwater areas of Puget Sound, from the entrance to the Strait of Juan de Fuca inward. It excludes Washington Commercial Salmon Management Catch Reporting Area 4B during the months from May to September, when this area is under the jurisdiction of the Pacific Fisheries Management Council. Harvest objectives specified in the Resource Management Plan account for fisheries-related mortality of Puget Sound chinook salmon throughout the migratory range of this species – from Oregon and Washington to Southeast Alaska. The Resource Management Plan also includes implementation, monitoring, and evaluation procedures designed to ensure that fisheries are consistent with the objectives of the Resource Management Plan for conservation and use. Fishery activities under the Resource Management Plan would affect the listed Puget Sound Chinook Salmon and Hood Canal Summer-Run Chum Salmon Evolutionarily Significant Units. Salmon abundance is highly variable from year to year, both among chinook populations and other salmon species, requiring managers to formulate fisheries to respond to the population abundance conditions particular to that year. Therefore, the Resource Management Plan does not include the specific details of an annual fishing regime – i.e., where and when fisheries occur; what gear will be used; or how harvest is allocated among gears, areas, or fishermen. However, the Resource Management Plan does provide the framework and objectives against which the co-managers must develop their annual action-specific fishing regimes to protect Puget Sound chinook salmon and meet other management objectives.

The purpose and need for the Proposed Action (Section 1) is to provide for harvest of salmon species in Puget Sound marine and freshwater areas that:

- Ensures the sustainability of Puget Sound chinook salmon by conserving the productivity, abundance and diversity of the populations within the Puget Sound Chinook Evolutionarily Significant Unit
- Protects treaty Indian fishing rights and meets federal treaty trust responsibilities
- Provides equitable sharing of harvest opportunity among tribes, and among treaty and non-treaty fishers pursuant to U.S. v. Washington and U.S. v. Oregon

- Meets the requirement of Limit 6 of the 4(d) Rule under the Endangered Species Act (ESA) by: ". . . not appreciably reducing the likelihood of survival and recovery" of ESA listed Puget Sound chinook (50 CFR 223.203[b][6][i]).
- Manages risk associated with abundance estimation, population dynamics, and management implementation
- Optimizes harvest of abundant Puget Sound salmon (coho, chinook, sockeye, pink, chum) while protecting weaker commingled chinook stocks
- Accounts for all sources of fishery-related mortality
- Achieves the guidelines for allocation of harvest benefits and conservation objectives for chinook salmon under the Pacific Salmon Treaty.

Since the Puget Sound Chinook Evolutionarily Significant Unit was listed in 1999, the National Marine Fisheries Service (NMFS) has evaluated the impact of Alaskan, Canadian and southern U.S. salmon fisheries affecting listed Puget Sound chinook under section 7 of the ESA, and evaluated fisheries resource management plans in 2001 and 2003 for listed Puget Sound chinook under the 4(d) Rule Limit 6. National Environmental Policy Act (NEPA) reviews were also conducted on the 2001 and 2003 Resource Management Plans as part of the overall assessment of those Resource Management Plans. The current application of Limit 6 to the 2003 Resource Management Plan ~~expires~~ expired May 1, 2004. The co-managers jointly-developed another harvest RMP for Puget Sound commercial and recreational salmon, and steelhead net fisheries taking listed Puget Sound chinook for the 2004–2009 fishing seasons which began May 1, 2004. NMFS conducted a consultation under Section 7 of the ESA and issued a Biological Opinion in June of 2004 that the 2004 fishing season was not likely to jeopardize the Puget Sound Chinook ESU (NMFS 2004). The co-managers provided the RMP to NMFS, and NMFS is evaluating the RMP under Limit 6 of the Endangered Species Act (ESA) section 4(d) rule for the 2005–2009 fishing season, beginning May 1, 2005.

Application of Limit 6 to the proposed Resource Management Plan would ensure that in conducting fishery activities, the co-managers would not be subject to ESA take prohibitions because these activities would be conducted in a way that contributes to conserving the listed Evolutionarily Significant Units, or would be governed by regulations that adequately limit impacts to listed salmon. For NMFS to apply the provisions of Limit 6 for implementing a Resource Management Plan, the co-managers must jointly prepare a fishing plan that meets the requirements defined under Limit 6 of the 4(d) rule. NMFS must then make a determination pursuant with the government-to-government processes of the Tribal 4(d) Rule that the Resource Management Plan, as proposed and implemented by the co-managers, does not appreciably reduce the likelihood of survival and recovery of listed Puget

Sound chinook (50 CFR 223.203[b][6][i]). The NMFS determination under the 4(d) Rule is the major Federal action that triggers review under NEPA (NOAA Administrative Order 216.603(e)[2][a]).

Washington Trout, a Puget Sound environmental group, challenged the adequacy of the NEPA Environmental Assessment used by NMFS for its determination for the 2001 Puget Sound Chinook Harvest Resource Management Plan (Washington Trout v. Lohn, No. C01-1863R, Western District, Washington). As part of the settlement agreement reached with Washington Trout (July 22, 2002), NMFS agreed to prepare an Environmental Impact Statement for its 2004 determination related to a long-term Resource Management Plan.

The alternatives considered and analyzed in this ~~Draft~~ Final Environmental Impact Statement were formulated based on scientific information, alternatives described in the settlement agreement in Washington Trout v. Lohn, and public comments received during the scoping process for the Environmental Impact Statement on the ~~2004~~ Puget Sound Chinook Harvest Resource Management Plan. Several alternatives suggested by the public were eliminated from further consideration because they did not meet the purpose and need of the Proposed Action or were contained within the alternatives that were considered in more detail. It should be noted that Alternative 4 is also inconsistent with several elements of the purpose and need for the Proposed Action, and would not be considered were it not one of the alternatives identified for analysis in the settlement agreement to Washington Trout v. Lohn. In the analyses, Alternative 4 provides an upper-bound estimate of the decrease in mortality on fish and wildlife species affected by Puget Sound salmon fisheries, and an upper-bound estimate of socio-economic effects. A description of the Proposed Action and alternatives is provided in Section 2, Alternatives Including the Proposed Action. The alternatives considered for detailed analyses are:

Alternative 1:	The Proposed Action (the proposed Resource Management Plan)
Alternative 2:	Escapement goal management at the management unit level with no restriction on where fisheries may take place
Alternative 3:	Escapement goal management at the individual population level with terminal fisheries only
Alternative 4:	No authorized take of listed Puget Sound chinook salmon within the Strait of Juan de Fuca and Puget Sound area.

NEPA requires disclosure of how current environmental and social conditions would change with the Proposed Action or its alternatives. For this analysis, the Proposed Action (Alternative 1) most closely approximates current salmon harvest management practices and baseline environmental conditions, because the same type of harvest management plan has been implemented since 2000–2001. Therefore,

Alternative 1 is the baseline against which the environmental, social, and economic consequences of the action are compared. The predicted direct and indirect effects of alternatives on baseline environmental conditions (Alternative 1) are described in Section 4, Environmental Consequences, along with predicted cumulative effects on the natural, built and human environment when combined with other related actions.

The predicted outcome of implementing any of the alternatives evaluated in this ~~Draft~~ Final Environmental Impact Statement will depend on the Puget Sound chinook salmon abundance available to the fisheries in any individual year, and the amount of Puget Sound chinook harvest taken in Canadian and Alaskan fisheries prior to chinook salmon reaching Puget Sound fisheries. Canadian fisheries, which are outside the jurisdiction of U.S. fishery management agencies, account for 25 to 80 percent of the fishing-related mortality for most chinook populations within Puget Sound. Each alternative was evaluated for four scenarios that captured the general range in magnitude of abundance and the level of Puget Sound chinook salmon harvest in Canadian and Alaskan fisheries that is reasonably expected to occur across the duration of the Proposed Action (the ~~2004~~ 2005–2009 fishing seasons), in order to capture the range of predicted impacts of the Proposed Action or alternative. A more detailed discussion of the basis and choice of these scenarios is presented in Subsection 4.2 of this Draft Environmental Impact Statement: Basis for Comparison of Alternatives and Approach to Alternatives Analysis.

Scenario	Abundance	Canadian/Alaskan Fisheries
Scenario A	2003 Puget Sound abundance	2003 Canadian/Alaskan fisheries harvest.
Scenario B	2003 Puget Sound abundance	High Canadian/Alaskan fisheries harvest.
Scenario C	30% reduction from 2003 abundance	2003 Canadian/Alaskan fisheries harvest.
Scenario D	30% reduction from 2003 abundance	High Alaskan/Canadian fisheries harvest.

The indications of a plateau or potential reduction in marine survival (the primary influence on abundance), and expectations that Canadian fisheries will continue to increase as they have in recent years, led the Interdisciplinary Team to conclude that Scenario B is the *most likely* to occur during implementation of the Proposed Action. However, the other scenarios followed the same general patterns of impact when comparing among alternatives for each resource.

The ~~Draft~~ Final Environmental Impact Statement examines the predicted effects of the Proposed Action and three alternatives on a range of issues including fish species (salmon and non-salmon), federal treaty trust responsibilities, subsistence use, economics, environmental justice and wildlife

(Section 4, Environmental Consequences). From the information provided in this ~~Draft~~ Final Environmental Impact Statement, the Regional Administrator of the NMFS Northwest Region must decide:

1) Which harvest management strategy to adopt for salmon fisheries that take listed Puget Sound chinook salmon in Puget Sound and the Strait of Juan de Fuca that would meet the requirements for Limit 6 of the 4(d) take prohibition

2) If a harvest strategy other than that proposed by the co-managers is preferred, whether to limit the geographic location of salmon fisheries that take listed Puget Sound chinook within the Puget Sound Action Area.

CEQ Regulations (§1502.14[e]) require that the agency "Identify the [agency's] preferred alternative or alternatives, if one or more exists, in the draft [environmental impact] statement…unless another law prohibits the expression of such a preference." The Environmentally Preferable Alternative "ordinarily, means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural and natural resources" (CEQ 40 Most Asked Questions, No. 6a). The Preferred Alternative is the alternative NMFS believes best fulfills the purpose and need for the Proposed Action. The Preferred Alternative and the Environmentally Preferable Alternative need not be the same. NMFS may take into account various other considerations in choosing its Preferred Alternative, including such factors as the agency's statutory mission and responsibilities, and economic, environmental, technical, and social factors.

The following factors weighed most heavily in NMFS' decision concerning the Agency Preferred Alternative and the Environmentally Preferable Alternative: 1) effects on fish, and in particular the ESA-listed Puget Sound chinook salmon; 2) various levels of restriction on tribal treaty rights (from voluntary to mandated) and trust responsibilities, and the subsequent effects thereon; 3) treaty Indian ceremonial and subsistence uses; 4) various levels of environmental justice effects on Puget Sound tribes; 5) stable or increasingly adverse economic impacts to fishing communities; 6) secondary effects of fishing resulting from interactions of hatchery salmon that escape fisheries with wild salmon (i.e., straying); and 7) fishing-related impacts to fish habitat. For other resources evaluated in the Draft Environmental Impact Statement (wildlife, ownership and land use, water quality), there were no or very small differences among the alternatives, or uncertainty in the outcome precluded assessment of the effect (see Section 5, Identification of the Environmentally Preferable and Agency Preferred Alternative, for further details).

Alternative 1, the Proposed Action, is the NMFS' preferred alternative because NMFS believes this alternative would be most successful at balancing resource conservation, trust obligations to Native

American tribes, promotion of sustainable fisheries and prevention of lost economic potential associated with overfishing, declining species and degraded habitats. NMFS did not choose Alternative 4, the Environmentally Preferable Alternative, as its preferred alternative due to: 1) the anticipated substantial adverse impacts to tribal treaty rights, treaty Indian ceremonial and subsistence fishing uses, environmental justice effects, and economic effects on fishing communities predicted for this alternative; 2) the expected reduction in adverse biological impacts from implementation of Alternative 4 were not predicted to be substantial enough to outweigh the losses in these other areas, particularly for listed Puget Sound chinook salmon; and 3) failure to achieve the purpose and need for the Proposed Action.

NEPA regulations and guidance indicate that agencies have discretion in choosing a preferred alternative different from the environmentally preferred alternative "based on relevant factors including economic and technical considerations and agency statutory missions" (40 CFR 1505.2[b]). NMFS has three primary mandates with regard to this Proposed Action: 1) implement the ESA; 2) carry out its federal trust responsibilities with Native American tribes, including protecting the exercise of federally-recognized treaty tribal fishing rights and; 3) provide for sustainable fishing opportunity. In addition, Presidential Executive Orders require that NMFS minimize conflicts between its implementation of the ESA and exercise of tribal activities (E.O. 13175), e.g., treaty reserved fishing rights, and fishing (E.O. 12962). The Secretarial Order (DOI Order 3206) requires that any restrictions of tribal fishing under the ESA 1) be reasonable and necessary for the conservation of the species at issue; 2) occur only when the conservation purpose of the restriction cannot be achieved by reasonable regulation of non-Indian activities; 3) be the least restrictive alternative available to achieve the conservation purpose; 4) not discriminate against Indian activities either as stated or implied; and 5) that voluntary tribal measures are not adequate to achieve the necessary conservation purpose. NMFS staff has proposed to conclude that Alternative 1 (the Proposed Action) would not appreciably reduce the likelihood of survival or recovery of listed Puget Sound chinook salmon[1]. Therefore, the further reductions in fisheries, and tribal fisheries specifically, that would occur with implementation of Alternative 2, 3, or 4 are not required to meet ESA requirements, and would represent an unreasonable and unnecessary constraint on the exercise of federally-recognized treaty fishing rights. In addition, the approach represented in Alternative 1 is more robust overall to management error and key uncertainties in environmental parameters (see Subsection 4.3.8, Fish: Indirect and Cumulative Effects) and therefore should better

[1] NMFS' Proposed 4(d) Evaluation and Determination for the Puget Sound chinook resource management plan is currently undergoing public comment and review.

protect salmonid resources evaluated in the Environmental Impact Statement and better promote sustainable fishing opportunities.

Under the most likely scenario to occur over the duration of the Proposed Action (the ~~2004~~ 2005–2009 fishing seasons), implementation of Alternative 2, 3, or 4 is predicted to result in the loss of more than 94 percent of the local and regional sales, employment, and personal income generated by commercial salmon fishing associated with the Puget Sound fishery. Reductions in sport fishing-related economic activity would range from 12 to 72 percent (see Subsection 4.6, Economic Activity and Value: Environmental Consequences). These predicted effects would be most severe in communities dependent upon commercial and sport fishing activities. Combined with substantial declines in fishing industries that these communities have already experienced over the past 20 years, these predicted effects would further affect the character and viability of these communities, especially tribal communities (see Subsections 4.5, Treaty Indian Ceremonial and Subsistence Salmon Uses: Environmental Consequences; and 4.7, Environmental Justice: Environmental Consequences). The primary basis for the identification of Alternative 4 as the Environmentally Preferred Alternative was the increased abundance in fish species. Alternative 4 (as well as Alternative 2 or 3) would provide for substantially larger escapements of salmonids, larger abundance of forage fish, and a slightly greater possibility of rebuilding some individual listed Puget Sound chinook populations more quickly. However, given the discussion above, it is unclear what realistic effect this would have on the status of salmonid populations. NMFS has tentatively concluded that Alternative 1 will meet ESA requirements. Management objectives for the other salmonid species are also predicted to be met. Since Alternative 1 also provides for the conservation needs of these resources, NMFS does not consider the predicted reduction in adverse biological impacts from the implementation of Alternative 4 substantial enough to outweigh the significant economic losses that would be prevented under Alternative 1.

Finally, NEPA regulations require that the selected alternative be consistent with the purpose and need for the Proposed Action. Alternative 4 would be inconsistent with several elements of the purpose and need for the Proposed Action, and would not have been considered were it not one of the alternatives identified for analysis in the settlement agreement to Washington Trout v. Lohn. It would not: 1) provide for the meaningful exercise of federally protected treaty fishing rights; 2) provide for tribal and non-tribal fishing opportunity co-managed under the jurisdiction of U.S. v Washington; or 3) optimize harvest of abundance of Puget Sound salmon while protecting weaker commingled chinook salmon stocks.

List of Acronyms

CCEG	Current-condition escapement goal
CEQ	President's Council on Environmental Quality
CET	Critical escapement threshold
CFR	Code of Federal Regulations
CWT	Coded-wire tag (or tagged)
EPA	U.S. Environmental Protection Agency
ER	Exploitation rate
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FIRE	Finance, Insurance and Real Estate sectors
FR	Federal Register
FRAM	Fisheries Regulation Assessment Model
IMPLAN	Impact Analysis and Planning Professional (Minnesota IMPLAN Group)
LIFT	License and Fish Ticket database (Washington Department of Fish and Wildlife)
NEPA	National Environmental Policy Act
NFP	Northwest Forest Plan
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fisheries Management Council
NWIFC	Northwest Indian Fisheries Commission
PBR	Potential Biological Removal value
PFMC	Pacific Fisheries Management Council
PSAMP	Puget Sound Ambient Monitoring Program
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
RER	Recovery exploitation rate
RMP	Resource Management Plan
SFA	Sustainable Fisheries Act
TMOSNRT	*TENYO MARU* Oil Spill Natural Resources Trustees
USFWS	United States Fish and Wildlife Service
VET	Viable escapement threshold

VSP	Viable Salmonid Population guidelines
WDFW	Washington Department of Fish and Wildlife
WTP	Willingness to pay
WWTIT	Western Washington Treaty Indian Tribes

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Glossary

4(d) Rule	Regulations adopted by the Secretary of Commerce that he/she deems necessary and advisable for the conservation of threatened species. For this document, the 4(d) Rule specifically means those regulations published by NMFS on July 10, 2000 for fourteen listed salmon ESUs.
Action area	See Puget Sound Action Area, below.
Adjudicated fishing rights	Fishing rights of federally-recognized Indian tribes that have been established pursuant to court decree.
Adverse impact	An impact that has a negative consequence.
Alleles	Location in the genetic material (DNA) where genetic traits are carried. The type and frequency of the alleles in a population constitutes the genetic diversity of the population.
Alternatives	Reasonable actions that fit the purpose and need for the Proposed Action.
Angler days	Trips by sport fishermen.
Annex	The detailed agreements that implement the principles of the Pacific Salmon Treaty.
Asymptote	A straight line approached by a given curve as one of the variables in the equation of the curve approaches infinity.
Authorized take	Take of a listed species defined in the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct" conducted in a manner approved by the federal agency with jurisdiction over that listed species; i.e., NMFS or USFWS.
Bag limit	The number of fish allowed to be harvested in recreational fisheries within a certain time frame, e.g., angler trip. It may also be measured relative to another species; e.g., two salmon, only one of which is a chinook.
Beneficial impact	An impact that has a positive consequence.
Blackmouth	Immature chinook salmon.
Brood year	The year in which returning salmon adults spawn or the year in which the parents of a group of fish of the same age spawned.
Bycatch	Unintentional capture of marine birds or mammals during fisheries using any of a variety of gear types.
Carcass biomass	The volume of spawning salmon, measured in this document by spawner abundance.
Ceremonial uses	Salmon is a traditional food of Puget Sound Native American tribes. Examples of ceremonies that require traditional meals, including salmon, are: winter ceremonials, naming ceremonies, giveaways and feasts, and funerals.
Cetaceans	Whales, dolphins, porpoise.

Chinook-directed fisheries	Fisheries with the objective of harvesting chinook salmon.
Coded-wire tags	Minute, implanted tags in a portion of hatchery-reared salmon that reveal information about their origin.
Cohorts	Fish of a given age and stock at the beginning of a particular year of life.
Co-managers	Washington Department of Fish and Wildlife, and Puget Sound Treaty Tribes.
Commingle	To mix together.
Critical escapement threshold	A level of escapement below which extinction risk increases substantially.
Cumulative impact	The impact on the environment that would result from the incremental effects of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (CEQ 1508.7).
Current-condition escapement threshold	The number of spawners that meet the productivity and capacity constraints of a given river system.
Depensatory mortality	Mortality that occurs at very low population abundance that has the affect of destabilizing or further destabilizing the population.
Depressed population	A population whose production is below expected levels based on available habitat and natural variations in survival rates, but above the level where permanent damage to the population is likely.
Direct effect	An effect that would be caused by the proposed action or alternatives and occur at the same time and place as the action. Direct effects typically arise from construction activities, and may also occur from operations associated with the proposed action or alternatives (40CFR 1508.8[a]).
Disproportionate effect	An incidence (or prevalence) of an effect, a risk of an effect, or likely exposure to environmental hazards that would potentially cause adverse effects on a minority and/or low income population that significantly exceeds that experienced by a comparable reference population – a form of effects analysis used in the Environmental Justice subsection (4.7).
Diurnal foraging	Daytime foraging.
Endangered species	The ESA defines a threatened species as "any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class *Insecta* determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man."
Escapement	The number of spawning adult salmon that return to a particular geographic area.
Escapement floor	The number of spawning adult salmon for a population or management unit that harvest management actions are designed to meet or exceed.

Escapement goal	A management objective expressed as the number of fish returning to natural or artificial (hatchery) spawning areas.
Escapement goal management	A harvest management strategy whereby fisheries are managed to achieve an escapement goal(s).
Estuarine habitat	Tidal flats and river mouths (like Padilla Bay and the mouth of the Nooksack River).
Exploitation	Harvest.
Exploitation rate	The total mortality in a fishery or aggregate of fisheries expressed as the proportion of the un-fished cohort removed by fishing.
Exploitation rate ceiling	The maximum exploitation rate allowed for a population or management unit. A ceiling differs from a target in that fisheries are not managed to achieve the ceiling, but generally to fall below it.
Ex-vessel value	The dollar value that commercial fishermen receive for their product once it leaves the fishing vessel.
Fecundity	Fertility. For salmon, fecundity is measured as the number of eggs produced per female.
Federal trust responsibility	Duties and responsibilities of the federal government to manage the property and natural resources of the Tribes for the benefit of the Tribes.
Federally-recognized tribes	Any Indian or Alaska Native tribe, band, nation, pueblo, village or community that the Secretary of the Interior acknowledges to exist as an Indian tribe. The Secretary of the Interior is required to publish an annual list of such tribes in the Federal Register (25 USC sections 479a and 479a-1).
Fingerlings	Actively-feeding juvenile salmon within river systems.
Fishing regime	The specific group of fishery actions/regulations that are taken to achieve fishery management objectives.
Fry	Newly-emerged salmon.
Genetic diversity	The variation in inherited traits.
Genetic integrity	Maintenance of unique genetic characteristics of a population.
Genome	The genetic material (DNA, chromosomes) contained in living cells.
Ghost net	Fishing nets, especially gillnets, that have been lost but continue to capture fish, marine birds, marine mammals and crabs.
Harvest	Fish killed as a result of encounters with fishing gear.
Harvest rate	Total fishing mortality in a fishery expressed as a proportion of the total fish abundance available (standing stock) in a given fishing area at the start of a time period.
Hatchery-origin fish	Fish whose parents spawned or were spawned in a hatchery.
Hatchery-spawning fish	Same as hatchery-origin fish.

Healthy population	A population experiencing production levels consistent with its available habitat and within the natural variations in survival for the population.
Hood Canal region	For purposes of this analysis, the Hood Canal region includes Jefferson, Kitsap and Mason Counties, and the following river systems: Skokomish, Hamma Hamma, Dosewallips, Duckabush, Big Quilcene, and Little Quilcene.
Hook-and-line fishery	Fisheries that use hook-and-line gear, e.g., troll and sport fisheries, to catch fish.
Hook-ups	The occurrence of catching marine birds in hook-and-line sport fisheries.
Incidental catch	Fish captured during a fishery targeted at another species.
Incidental take	Accidental harm or death caused to a threatened or endangered species during a fishery targeted at another species.
Indicator populations	Hatchery produced salmon that are marked with coded-wire tags and are used to represent associated wild spawning populations.
Indirect effect	Reasonably foreseeable effects that would be caused by the proposed action or alternatives, but which would occur later in time or further removed from the project site or action area than direct effects. Indirect effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the lead agency believes the effect will be beneficial. Indirect effects may be growth-inducing or otherwise related to changes in land use patterns, population density, or growth rate, and may affect air quality, water, and/or other natural systems (40CFR 1508.8[b]).
Inland marine deeper water habitat	Marine waters of Puget Sound greater than 66 feet deep.
Listed species	Species listed under the Endangered Species Act as threatened or endangered.
Low effect	Measurable but of small amount or occurs infrequently.
Marine Catch Areas	Geographic areas in marine and freshwaters defined for the purposes of reporting catch.
Marine-derived nutrients	The input of nutrients into freshwater systems associated with the return, death and decomposition of adult salmon.
Management unit	A population or group of populations aggregated for the purpose of achieving a management objective.
Marine shelf habitat	Deepwater habitat of the Strait of Juan de Fuca west of a line from the mouth of the Elwha River north to Race Rocks on the southern tip of Vancouver Island, influenced by oceanic currents.
Mesocosm	Communities in the middle or community structure that transitions from one layer to another, e.g., rock-insect-fish.
Moderate effect	Measurable at some level between low and substantial.
Morphology	The form and structure of an organism.

Morphological	Pertaining to the form and structure of an organism.
Mortality	Number or amount of salmon killed.
Natal stream	Stream of origin.
Natural escapement	The number of fish spawning in the wild regardless of whether their parents spawned in the wild or in a hatchery.
Naturally-spawning	Spawning in the wild.
Nearshore marine habitat	Marine areas of Puget Sound between high tide and the end of the photic zone (66 feet depth).
Net economic value to commercial fishermen	The amount of total revenues received by vessel operators less the costs of production, including wages, operational expenses (like fuel and equipment), and fixed costs (such as insurance and depreciation).
Net economic value for sport anglers	The amount anglers would be willing to pay over and above what they actually pay is the measure of net economic value (or the value received) to anglers.
No effect	Not measurable and/or expected, or of such a rare occurrence that it is impossible to measure or detect.
North Hood Canal	The Economic Activity analysis of this Environmental Assessment addresses North Hood Canal (Jefferson County) and Clallam County in a subregion identified as Strait of Juan de Fuca/North Hood Canal.
North Puget Sound region	For purposes of this analysis, the North Puget Sound region includes Snohomish, Skagit, Whatcom, Island and San Juan Counties, and the following river systems: Nooksack, Samish, Skagit, Stillaguamish, and Snohomish.
Nutrient loading	The nutrients released into a system proportional to carcass density.
Otoliths	Bones in the head of a fish that indicate age.
Out-of-watershed-origin chinook	Chinook originating from a watershed other than that in which they are found, or chinook originating from a watershed other than that under discussion.
Population areal unit	The geopolitical unit used for purposes of the Environmental Justice analysis. Contains the populations used to define the target area: by county.
Precocious	Age-2 fish.
Productivity of systems	The survival rate of a population from a particular watershed from one life stage to another measured after taking into consideration mortality occurring during that period, e.g., juveniles produced per spawning adult.
Progeny	Offspring of spawning salmon.
Proposed Action	The Puget Sound chinook harvest management framework proposed by the Washington Department of Fish and Wildlife and the Puget Sound Treaty Tribes (co-managers).

Puget Sound Action Area	All marine waters of the State of Washington east of, and including, the Strait of Juan de Fuca; all State of Washington freshwater tributaries to these marine waters east of the Strait of Juan de Fuca; the freshwater tributaries of the Strait of Juan de Fuca east of, and including, the Elwha River drainage; and the counties that border these waters.
Pulsed openings	Fishery openings scheduled for short duration. These openings are generally scheduled throughout the period over which salmon move through an area so that harvest is not focused on any one segment of the run.
Rebuilding exploitation rate	A harvest objective used by NMFS that defines the level of salmon fishery exploitation that would result in a low probability that the harvest action will endanger the population, and a relatively high probability that it will not impede recovery.
Recovery exploitation rate	A harvest objective used by the co-managers that defines the level of salmon fishery exploitation that would result in a low probability that the harvest action will endanger the population, and a relatively high probability that it will not impede recovery.
Recruits	The number of salmon in an the unfished cohort produced from a single brood year (parental escapement).
Redds	"Nests" constructed by salmon in gravel.
Redd superimposition	A phenomena that occurs when later arriving adult spawners spawn in the same places as earlier arriving adult spawners, in effect, digging up redds dug by previous spawners. This generally causes significant mortality to the eggs laid by the previous spawners.
Reference area	For purposes of the Environmental Justice analysis in this Environmental Assessment, the reference area is the State of Washington.
Resource management plan	A plan that includes a process, specific regulations, management objectives or other information required to manage a natural resource. For this document, the natural resource would be salmon.
Run timing	The time over which a population or group of populations move through or into an area, e.g., the time over which adults return to the spawning grounds.
Salmonids	All fishes belonging to the taxonomic family *Salmonidae*; i.e., salmon and trout.
Smolts	Actively-feeding juvenile salmon, physiologically ready to migrate to salt water.
Smolting	Transitional life stage of juvenile salmon at the point where they move from fresh water to salt water; may occur in a river or within an estuary.
South Hood Canal	The Economic Activity analysis of this Environmental Assessment addresses South Hood Canal (Mason and Kitsap counties) and South Puget Sound (King, Pierce and Thurston counties) in a subregion identified as South Puget Sound/South Hood Canal.

South Puget Sound region	For purposes of this analysis, the South Puget Sound region includes King, Pierce, and Thurston Counties, and the following river systems: Cedar, Green/Duwamish, Puyallup, Nisqually, Deschutes, and Shelton.
Southern U.S. fisheries	Chinook salmon fisheries occurring in Puget Sound and off the Pacific coast of Washington, Oregon and California.
Spawner density	The number of spawning salmon per area of spawning habitat.
Spawning escapement	The number of sexually-mature adults returning to spawning grounds.
Strait of Juan de Fuca region	For purposes of this analysis, the Strait of Juan de Fuca region includes Clallam County and the following river systems: Elwha and Dungeness.
Stratum	Sampling groups.
Straying	The occurrence of some hatchery-origin fish failing to return to the hatchery at the time of spawning.
Straying rate	The proportion of total hatchery-origin escapement not removed from the natural environment through trapping, or the number of hatchery-origin salmon that otherwise strayed from their point of release.
Subsistence uses	The ways in which indigenous people utilize the environment and the resources it provides (such as salmon) to meet the nutritional needs of the members of the society.
Substantial effect	A high impact that is measurable and/or expected, or likely to occur more frequently than anticipated.
Sub-yearlings	Juvenile salmonids that migrate as fingerlings.
Take	The ESA defines take as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any wildlife species listed as endangered, without written authorization.
Take prohibition	Ban of take.
Target area	The geographical study area for purposes of the Environmental Justice analysis; synonymous with the Puget Sound Action Area in this case.
Target population	The potentially affected residents of each county within the target area.
Terminal areas	Locations containing only populations that return to a single river system.
Terminal fisheries	Freshwater fisheries only; i.e., within rivers and lakes.
Terminal net fisheries	Freshwater fisheries that use net fishing gear; e.g., drift gill nets, set gill nets, beach seines, dip nets.
Threatened species	The ESA defines a threatened species as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”
Transport vectors	Stream flow, stream channel structure, and similar factors.
Unlisted species	Species that have not been listed under the Endangered Species Act as threatened or endangered

Usual and accustomed fishing areas	Traditional Indian fishing grounds so designated through judicial process. Defined in the Boldt Decision (383 Federal Supplement 312: 313) as every fishing location where members of an Indian tribe customarily fished from time to time at and before treaty times, however distant the then-usual habitat of the tribe, and whether or not other tribes then also fished in the same waters.
U.S. v. Washington	Commonly referred to as "The Boldt decision", U.S. v Washington is the on-going Federal court proceeding that enforces and implements reserved treaty fishing rights with regard to salmon and steelhead returning to Western Washington.
Viable escapement threshold	A level of escapement that would generally indicate recovery or a point beyond which ESA protection is no longer required.
Viable Salmonid Population guidelines	Generic values or descriptive guidelines for abundance, productivity, spatial structure and diversity provided by NMFS in Viable Salmonid Populations and the Recovery of Evoluntionarily Significant Units (McElhany et al., 2000) used as one factor in assessing the status of population where population-specific information is not available.
Wild exploitation rate	The total mortality in a fishery or aggregate of fisheries expressed as the proportion of the un-fished cohort whose parents spawned the wild that are removed by fishing.
Wild-origin fish	Fish whose parents spawned in the wild
Yearlings	Juvenile salmon that have reared at least one year in freshwater